

REMARKS

Amendments

Claims 1 and 16 have currently been amended, and new claim 34 has been added. Claims 1-11, 14-16 and 28-34 are currently pending in the present application.

The methods of claims 1 and 16 have been amended for the sake of improved clarity. Specifically, these claims have been amended to indicate that the step of removing particulate material includes using microfiltration with a cutoff of 0.2 μm to filter out particulate material having a particle size of greater than about 0.2 μm from the extract to produce a purified extract comprising β (1-3) β (1-4) glucan having a particle size of less than 0.2 μm as a filtrate. Support for this amendment is provided, for example, at page 17, lines 9-11 and 18-20 of the description.

New claim 34 is derived from claim 1, and is further supported by page 17, lines 9-11 and 18-20 of the description.

It is submitted that these amendments do not constitute new matter, and their entry is requested.

Rejection Under 35 U.S.C. § 103(a)

The Examiner has rejected claims 1-6, 9, 11, 14-16 and 29-32 under 35 U.S.C. § 103(a) as being unpatentable over Bhatti (U.S. 5,518,710) in view of Potter *et al.* (U.S. 6,323,338). Applicant respectfully traverses the Examiner's rejection for the reasons set forth below.

Bhatti discloses a method that includes removal of degraded starches from a β glucan extract using centrifugation, dialysis or filtration (column 3, lines 63-65). The method of Bhatti would not, however, result in the isolation of β (1-3) β (1-4) glucan having a particle size of less than 0.2 μm , but rather a composition that comprises β (1-3) β (1-4) glucans having a *broader* range of particle sizes.

Potter *et al.* teaches a step of concentrating an intermediate solution from which insoluble material and flocculate have been previously removed by means of centrifugation, dialysis, filtration, or passage through a mesh or cloth (see Column 5, lines 19-65). The step of concentrating is conducted using ultrafiltration with a membrane having a cutoff size of 0.2 μm

to collect a *retentate* comprising β (1-3) β (1-4) glucans having particle sizes of *greater* than 0.2 μm . (See column 6, lines 26-32 and FIG. 2). Potter *et al.*, therefore, teaches separate steps for (i) removing insoluble material and particulate material from a beta-glucan extract to produce an intermediate solution, and (ii) concentrating the intermediate solution.

Neither Bhatti nor Potter *et al.* teach or suggest using a single step for both (i) removing insoluble material and particulate material from a beta-glucan extract and (ii) fractionating the beta glucan extract to produce a filtrate comprising beta glucan having a particle size of less than 0.2 μm . Furthermore, as the ultrafiltration step of Potter *et al.* is used for *concentrating* a beta glucan solution and not for removing insoluble material and particulate material, there would be no reason for one of skill in the art to substitute the ultrafiltration device disclosed in Potter *et al.* for the means for removing insoluble material and particulate material disclosed in Bhatti, to produce a filtrate comprising beta glucan having a particle size of less than 0.2 μm .

Thus, Applicants submit that the combination of Bhatti and Potter *et al.* does not render the claimed subject matter obvious.

In view of the above amendments and remarks, Applicants submit that the claimed subject matter is not obvious from the combination of Bhatti and Potter *et al.* Withdrawal of this rejection is requested.

Rejection Under 35 U.S.C. § 103(a)

The Examiner has also rejected claims 1-9, 11, 14-16 and 29-32 under 35 U.S.C. § 103(a) as being unpatentable over Bhatti in view of Potter *et al.* as applied to claims 1-6, 9, 11, 14-16 and 29-32 above, and further in view of Puski *et al.* (U.S. 4,830,861). Applicant respectfully traverses the Examiner's rejection for the reasons set forth below.

As detailed above, neither Bhatti nor Potter *et al.* teach or suggest using a single step for both (i) removing insoluble material and particulate material from a beta-glucan extract and (ii) fractionating the beta glucan extract to produce a filtrate comprising beta glucan having a particle size of less than 0.2 μm . Furthermore, as the ultrafiltration step of Potter *et al.* is used for *concentrating* a beta glucan solution and not for removing insoluble material and particulate

material, there would be no reason for one of skill in the art to substitute the ultrafiltration device disclosed in Potter *et al.* for the means for removing insoluble material and particulate material disclosed in Bhatti, to produce a filtrate comprising beta glucan having a particle size of less than 0.2 μm . Puski *et al.* does not cure the deficiencies of Bhatti and Potter *et al.* Thus, Applicants submit that the combination of Bhatti, Potter *et al.* and Puski *et al.* does not render the claimed subject matter obvious.

In view of the above amendments and remarks, Applicants submit that the claimed subject matter is not obvious from the combination of Bhatti, Potter *et al.* and Puski *et al.* Withdrawal of this rejection is requested.

Rejection Under 35 U.S.C. § 103(a)

The Examiner has rejected claims 1-6, 9-11, 14-16 and 29-32 under 35 U.S.C. § 103(a) as being unpatentable over Bhatti in view of Potter *et al.* as applied to claims 1-6, 9, 11, 14-16 and 29-32 above, and further in view of Novozymes (June 1, 2002, novozymes.com). Applicant respectfully traverses the Examiner's rejection for the reasons set forth below.

As detailed above, neither Bhatti nor Potter *et al.* teach or suggest using a single step for both (i) removing insoluble material and particulate material from a beta-glucan extract and (ii) fractionating the beta glucan extract to produce a filtrate comprising beta glucan having a particle size of less than 0.2 μm . Furthermore, as the ultrafiltration step of Potter *et al.* is used for *concentrating* a beta glucan solution and not for removing insoluble material and particulate material, there would be no reason for one of skill in the art to substitute the ultrafiltration device disclosed in Potter *et al.* for the means for removing insoluble material and particulate material disclosed in Bhatti, to produce a filtrate comprising beta glucan having a particle size of less than 0.2 μm . Novozymes does not cure the deficiencies of Bhatti and Potter *et al.* Thus, Applicants submit that the combination of Bhatti, Potter *et al.* and Novozymes does not render the claimed subject matter obvious.

In view of the above amendments and remarks, Applicants submit that the claimed subject matter is not obvious from the combination of Bhatti, Potter *et al.* and Novozymes. Withdrawal of this rejection is requested.

Rejection Under 35 U.S.C. § 103(a)

The Examiner has also rejected claims 1-6, 9-11, 14-16 and 28-33 under 35 U.S.C. § 103(a) as being unpatentable over Bhatti in view of Potter *et al.* as applied to claims 1-6, 9-11, 14-16 and 29-32 above, and further in view of Morgan (WO 2001/057092). Applicant respectfully traverses the Examiner's rejection for the reasons set forth below.

As detailed above, neither Bhatti nor Potter *et al.* teach or suggest using a single step for both (i) removing insoluble material and particulate material from a beta-glucan extract and (ii) fractionating the beta glucan extract to produce a filtrate comprising beta glucan having a particle size of less than 0.2 μm . Furthermore, as the ultrafiltration step of Potter *et al.* is used for *concentrating* a beta glucan solution and not for removing insoluble material and particulate material, there would be no reason for one of skill in the art to substitute the ultrafiltration device disclosed in Potter *et al.* for the means for removing insoluble material and particulate material disclosed in Bhatti, to produce a filtrate comprising beta glucan having a particle size of less than 0.2 μm . Morgan does not cure the deficiencies of Bhatti and Potter *et al.* Thus, Applicants submit that the combination of Bhatti, Potter *et al.* and Morgan does not render the claimed subject matter obvious.

In view of the above amendments and remarks, Applicants submit that the claimed subject matter is not obvious from the combination of Bhatti, Potter *et al.* and Morgan. Withdrawal of this rejection is requested.

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Conclusion

In view of the above amendments and remarks, Applicants believe that the present claims satisfy the provisions of the patent statutes and are patentable over the cited prior art. Reconsideration of the application and early notice of allowance are requested. The Examiner is invited to telephone the undersigned to expedite the prosecution of the application.

Respectfully submitted,

ROTHWELL, FIGG, ERNST & MANBECK, p.c.

By /Jeffrey L. Ihnen/
Jeffrey L. Ihnen
Registration No. 28,957
Attorney for Applicants
1425 K Street, N.W., Suite 800
Washington, D.C. 20005
Telephone No.: (202) 783-6040
Facsimile No.: (202) 783-6031